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THE FOREST SURVEY OF EASTERN OREGON AND EASTERN WASHINGTON

U. S. Forest Service
Pacific Northwest Forest Experiment Station

CALIFORNIA FOREST & RANGE EXPERIMENT STATION
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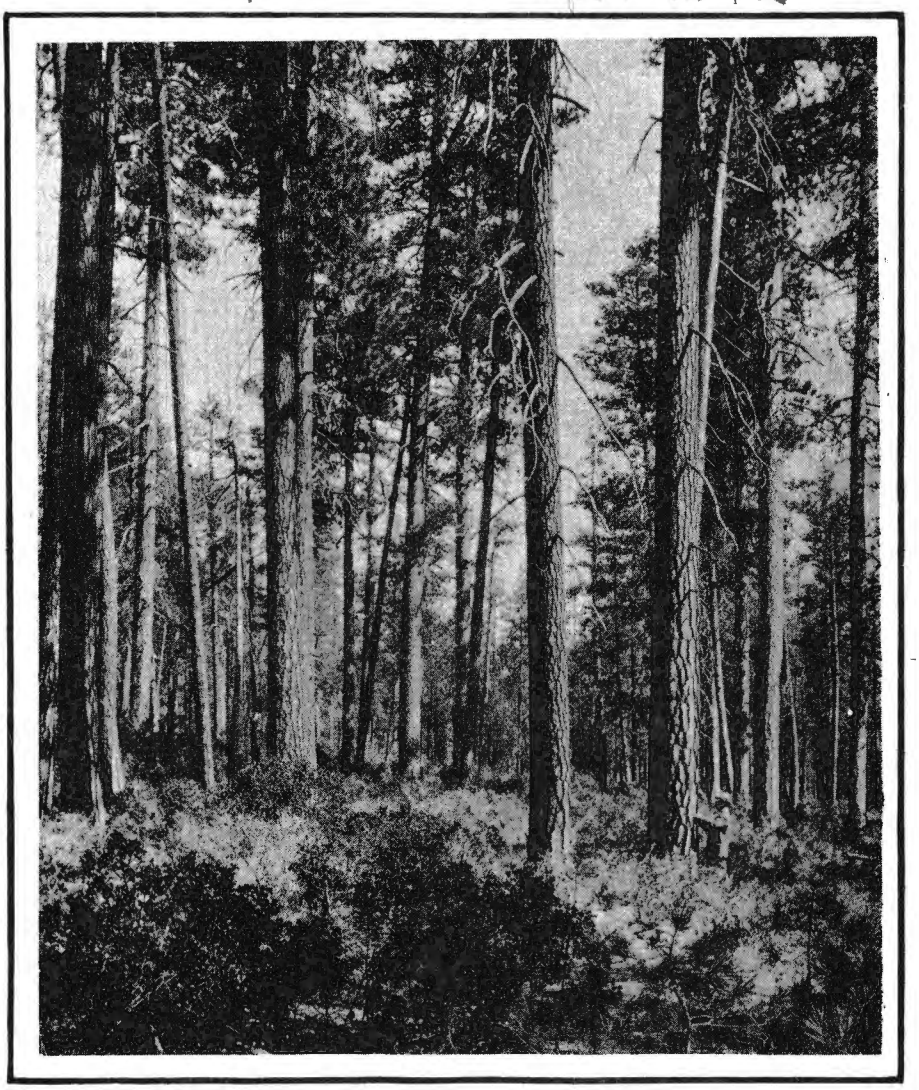
EXPLANATORY TEXT TO ACCOMPANY FOREST STATISTICS FOR EACH COUNTY

E Forest Survey report No 43



PACIFIC NORTHWEST FOREST EXPERIMENT STATION

PORTLAND, OREGON FEBRUARY 1, 1936

U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

CALIFORNIA FOREST & RANGE EXPERIMENT STATION
330 GIANNINI HALL, UNIVERSITY OF CALIFORNIA
BERKELEY, CALIFORNIA

Portland, Oregon February 1, 1936

Introduction

A forest survey of the United States was authorized in Section 9 of the McSweeney-McNary Forest Research Act of 1928. This survey is a comprehensive and detailed investigation of (1) the existing timber resources by volume and area; (2) the drain upon the forests through cutting and through loss by fire, insects, and disease; (3) current and potential forest growth; and (4) present and prospective wood requirements. Finally, it involves the interpretation of these data in their relation to each other and as related to data on other economic factors. The objective of this survey is thus to supply a basis for meeting adequately the needs for forest benefits, and for sound national, regional, and local planning, by public and private agencies for use of forest land.

The Pacific Northwest Forest Experiment Station was designated to make the forest survey of Oregon and Washington. Work was begun in 1930 in the region west of the summit of the Cascade Range, the so-called Douglas fir region, and was completed there in 1934. In 1933 work was begun in the region east of the Cascades, the so-called pine region. Field work on the inventory phase is now complete for the major part of the pine region; the remainder will be completed in 1936.

Tables and graphs presenting in condensed form basic facts relating to timber volumes and acreages occupied by forest cover types are being prepared for each forested county[1/] in the region. Forest type maps showing the composition and character of the forest cover are issued for each county soon after field mapping is completed, and type maps of the entire region will be issued later.

It has not been found practicable to present growth and depletion statistics by counties; but the 37 counties in the pine region have been grouped into several forest units, usually of more than two counties each. For each forest unit a report will be issued later presenting detailed inventory summaries, a textual description of the unit and statistics of growth and depletion analyzed in the light of the inventory.

1/ The forested counties of the pine region are Wasco, Jefferson, Deschutes, Klamath, Lake, Crook, Wheeler, Morrow, Umatilla, Grant, Harney, Malheur, Union, Baker, and Wallowa in eastern Oregon, and Okanogan, Chelan, Kittitas, Yakima, Klickitat, Ferry, Stevens, Pend Oreille, Spokane, Lincoln, Garfield, Columbia, Walla Walla, and Asotin in eastern Washington. Douglas, Grant, Adams, Whitman, Franklin, and Benton Counties in eastern Washington, and Sherman and Gilliam Counties in eastern Oregon, have so little forest land that no statistics will be issued for them.

Explanation of Methods and Terms

Sources of Data - In the survey of Oregon and Washington use was made, so far as possible, of all existing information on distribution of forest types and all available estimates of timber volume, including county cruises and maps and timber estimates made by other public agencies. Timber estimates of private lands were furnished by the owners with the understanding that they would be published only in combination with cruises of other owners and for large areas. This cooperation of timber owners was a very material aid to the project. Timber experts thoroughly checked in the field such existing estimates as were available and determined adjustment factors by which to correct them to the standard adopted by the forest survey. Some 113,000 acres in eastern Oregon and eastern Washington were intensively cruised to adjust the cruise on areas for which there were existing usable data. The survey field personnel made type maps and timber estimates of all forest areas in the region for which no usable data existed.

Timber Estimating Standards -- The timber estimates, summarized in the following tables were made in board feet, log scale, Scribner rule. All cruising, whether for adjustment purposes or for areas not covered by existing estimates, was so done as to include all living coniferous trees (except juniper) that would make at least one 16-foot log 8 inches in diameter inside bark at the small end and all hardwood trees that would make at least one 8-foot log 10 inches in diameter inside bark at the small end.

Allowance has been made in these estimates for decay, defects, and such breakage as is inevitable in exploitation; in other words, the estimates are for net volume usable in saw-timber operations practicing intensive utilization. The standards of utilization employed in the survey are probably slightly more intensive for the more valuable species and considerably so for the less valuable species than those observed by the average present-day saw-timber operator, owing largely to the inclusion of trees as small as 12 inches d.b.h.

Differences between present and previous county estimates do not necessarily indicate increases or decreases in volume of timber. Such differences may be due in large measure to differences between the present and previous cruises in standards and in completeness. The present estimates cover all forest trees of the above specifications outside of municipalities, whether in small farm woods or on extensive forest areas.

The estimates herein given make no distinction with regard to accessibility or availability to market, although it is recognized that in some counties some of the timber is readily accessible and some is utterly remote. Neither do they differentiate among classes of forest products, the whole volume above the stated limits being expressed in board feet of saw timber. In the statistics and analyses for units larger than a county, further subdivisions of the estimates will be considered.

Ownership Classes - Timber volume and forest-type acreages have been compiled by ownership classes. Information on ownership was taken from the best public records available. It is of course recognized that ownership is constantly changing. The totals for ownership classes will in many cases not

coincide with statistics from other sources; nor in fact will figures for total area of county always agree with figures hitherto accepted. The following ownership classes were considered:

Private. All privately owned forest property, including farm woods.
State, available for conversion. Includes any State-owned forest property not reserved from cutting.
State, reserved for any purpose. Includes parks, national-guard campgrounds, etc.
County. Includes forest property deeded to the county. Tax-delinquent land not deeded to the county is classified as "private".
Municipal. Includes all municipally owned forest property outside the platted limits of municipalities, such as city watersheds.
Indian. Includes both tribal lands and trust allotments.
Revested land grants. Includes O and C and other land grants that have reverted to Federal ownership, whether classified as "timber", "agricultural", or "power withdrawals".
Federal other than national forests and revested land grants, available for cutting. Includes public domain, etc.
Federal other than national forests and revested land grants, reserved from cutting. Includes national parks, wild-life refuges, etc.
National forest, available for cutting.
National forest, reserved from cutting.
Railroad selection pending. Federal lands designated for selection as railroad grants but not yet deeded.

The term "reserved from cutting" as applied to State land and to national-forest or other Federal land denotes that the timber is unavailable for cutting because of statute, proclamation, or policy, the land usually being officially dedicated to park, watershed or other uses to the exclusion of timber cutting. The term "available for cutting", in contrast to the above, means that there is no legal or formal prohibition on timber cutting.

Age Classes and Degree of Stocking - In addition to type mapping according to composition and size, the even aged immature forest stands, those in which most of the dominant trees are under 22 inches in diameter, were classified according to age in 10-year classes and according to their density in three degrees of stocking. If a forest of seedlings, saplings, or small "second growth" is dense enough to cover 70 to 100 percent of the area (as measured by the stocked-quadrat method), it is classified as "well stocked"; if 40 to 69 percent is covered, it is called "medium stocked"; if 10 to 39 percent, it is "poorly stocked". Areas less than 10 percent stocked are considered as "nonrestocking". If uneven aged the stands were classified on the basis of the stocking of poles and reproduction combined.

Tree Species - The timber estimates have been kept separately for all the tree species that usually reach saw-timber size and character. The absence of volume estimates for any species in table 1 does not necessarily

mean that the species does not occur in the county in question; a species may be present but not have been found in significant quantity or in trees of commercial size, or it may be confined to the noncommercial types. This is particularly true of such species as juniper and the hardwoods that often do not attain saw timber specifications. The common names employed by the Forest Service (U.S.D.A. Misc. Cir. 92) have been used throughout.

Definition of Terms - The abbreviation "DBH" signifies the diameter at breast height (4½ feet above ground) outside the bark.

In describing Douglas fir timber the terms "old growth" and "second growth" should be regarded as relative descriptive terms to distinguish the older, more mature timber from the younger and more rapid growing timber. There is no sharp line of demarcation between the two. Likewise the terms "large" and "small" applied to other species are relative.

Definitions of Types

The forest cover and land use types recognized by the forest survey of eastern Oregon and eastern Washington are defined below. Not all of these types occur in any one county.

Nonforest Land Types

1. Barrens: Areas too rocky, or too soilless, or too exposed to support a real vegetative cover of either trees, shrubs, herbs, or grass. Also includes cities, towns, and unmeandered water surface.

2. Cultivated, grass, grass swamp, sagebrush, or brush: Includes areas now in agricultural use or lying fallow and areas whose principal present vegetation is either grass, sagebrush, or brush, including marshy, swampy areas not considered lakes. Does not include "forest land", i.e., land which from all evidence has been forested in recent decades. No differentiation is made between cultivated land, natural pastures, and range lands.

Woodland Types

4. Oak: A stand containing approximately 60 percent or more of one or more species of oak. No separation of age classes.

   Juniper: A stand composed principally of juniper, often with more or less mountain mahogany. Land where the trees are so scattered that they occupy less than about 5 percent of the ground surface is not classified as juniper woodland.

5A. Dense juniper: A stand in which the juniper trees are so large or numerous that they occupy 10 percent or more of the land area.

5B. Scattered juniper: A stand in which the juniper trees are so small or scattered that they occupy less than 10 percent of the land area, although about 5 percent or more.

5½. Ponderosa pine woodland: An area with solitary trees, or groups of trees too small to map separately, in which mature ponderosa pine is the predominating tree. A borderline zone, characteristic of the fringes of the desert and of the breaks between timbered plateaus and treeless canyons, where the area of grass or sagebrush may be as great or greater than the area of timber. This type usually merges at its upper boundary with timberland types and at its lower limit with open land. For the zone as a whole the volume per acre is ordinarily less than 3,000 feet. The trees are not necessarily noncommercial. Immature types are not included.

Timberland Types

Douglas fir: Forests containing approximately 60 percent or more, by volume, of Douglas fir. The following size classes are recognized:

6. Douglas fir, large old growth: Forests in which most of the volume is in trees more than 40 inches in DBH.

7. Douglas fir, small old growth: Forests in which most of the volume is in trees 22 to 40 inches in DBH.

8. Douglas fir, large second growth: Forests in which most of the volume is in trees 22 to 40 inches in DBH. Coarse-grained timber that will cut only a small percentage of the upper grades of lumber.

9A. Douglas fir, 12-20 inches DBH: Forests in which most of the volume is in trees 12 to 20 inches in DBH.

9B. Douglas fir, 6-10 inches DBH: Forests in which most of the dominant trees are from 6 to 10 inches in DBH.

10. Douglas fir, less than 6 inches DBH: Forests in which most of the dominant trees are less than 6 inches in DBH.

Western red cedar: Forests containing approximately 40 percent or more, by volume, of western red cedar. Largely confined to swamps and stream margins on the eastern Washington national forests.

17. Western red cedar, more than 24 inches DBH: Forests of saw-timber size in which most of the volume is in trees more than 24 inches in DBH.

19A. Western red cedar, 12-24 inches DBH: Forests in which most of the volume is in trees from 12 to 24 inches in DBH.

19B. Western red cedar, less than 12 inches DBH: Forests in which most of the dominant trees are less than 12 inches in DBH.

Ponderosa pine: Forests containing approximately 50 percent or more, by volume, of ponderosa pine, sugar pine, or Jeffrey pine, or any combination of these species, except those in which sugar pine is the key tree, in which the stands are continuous in contrast to the more open ponderosa pine woodland type. Three size classes are recognized.

20. Ponderosa pine, large: Forests in which the dominant stand averages more than 22 inches in DBH, so-called "yellow pine" (more than about 150 or 200 years old), no material part of which has been cut. Includes occasional stands of mature or overmature ponderosa pine that average smaller than 22 inches in DBH.

20.5 Pure ponderosa pine, large: Forests containing approximately 80 percent or more, by volume, of ponderosa pine or Jeffrey pine.

20A. Ponderosa pine-sugar pine mixture, large: Forests with more than 50 percent ponderosa pine, by volume, and 20 percent or more of sugar pine, in which most of the volume is in trees more than 22 inches in DBH.

20B. Sugar pine mixture, large: Forests containing 20 percent or more, by volume, of sugar pine and less than 50 percent of ponderosa pine, usually in mixture with Douglas fir, ponderosa pine, or white fir, in which most of the volume is in trees more than 22 inches in DBH.

21. Ponderosa pine, small: Either (a) selectively cut stands of any age in which the volume of ponderosa pine trees 12" or more in DBH is 1,000 board feet or more per acre, or (b) immature stands, so-called "bull pine" (less than 150 to 200 years old), of 1,000 board feet or more per acre, usually with the greater part of volume in ponderosa pine trees from 12 to 22 inches in DBH but including the occasional immature stands in which the trees exceed 22 inches in DBH.

22. Ponderosa pine, seedlings, saplings, and poles: Forests on old burns or heavily cut-over land in which most of the trees are less than 12 inches in DBH and the stand of saw timber, if any, amounts to less than 1,000 board feet per acre.

Fir-hemlock: Forests in which either noble fir, silver fir, alpine fir, Shasta red fir, white fir, mountain hemlock (or, occasionally, western hemlock), or any combination of these species composes at least 50 percent of the volume of the stand. This type is characteristic of the upper slopes of the Cascade Range. Two size classes are recognized.

23. Fir-hemlock, large: Forests in which most of the volume is in trees 12 inches or more in DBH and physically suitable for saw logs. (Mature stands not suitable for saw logs are ordinarily included in the subalpine type.)

24. Fir-hemlock, small: Forests in which most of the dominant trees are less than 12 inches in DBH, usually young trees on old burns.

Lodgepole pine: Forests containing at least 50 percent, by volume, of lodgepole pine, often almost pure. Three size classes are recognized.

25. Lodgepole pine, 12 inches and larger DBH: Forests in which 50 percent or more of the dominant trees are 12 inches or more in DBH.

26. Lodgepole pine, 6-10 inches DBH: Forests in which most of the dominant trees are from 6 to 10 inches in DBH.

26A. Lodgepole pine, less than 6 inches DBH: Forests in which most of the dominant trees are less than 6 inches in DBH.

Pine mixture: Mixed forests of which ponderosa pine constitutes about 20 to 50 percent, by volume, with a variable quantity of western larch, white fir, Douglas fir, lodgepole pine, white pine, or other species or of any combination of these species. Characteristic of north slopes and cooler basins. Two size classes are recognized.

27. Pine, mixture, large: Forests in which most of the volume is in trees 12 inches or more in DBH and in which no material quantity of cutting has been done.

28. Pine, mixture, small: Forests in which most of the dominant trees are less than 12 inches in DBH.

Upper-slope mixture: Mixed forests ordinarily above the ponderosa pine zone, never containing more than a negligible quantity of that species. Characteristic of the colder, moister sites. Contains variable proportions of larch, white fir, alpine fir, Douglas fir, Engelmann spruce, lodgepole pine, white pine, and occasionally other species. Where Engelmann spruce, white pine, or larch forms 50 percent or more of the stand, by volume, mapped as a separate subtype and designated by adding species symbol to type number, e.g., 27.5 ES. Two size classes are recognized.

27.5 Upper-slope mixture, large: Forests in which most of the volume is in trees 12 inches or more in DBH.

28.5 Upper-slope mixture, small: Forests in which most of the dominant trees are less than 12 inches in DBH.

White fir: Forests containing 50 percent or more, by volume, of Abies grandis or A. concolor. Usually occur within the range of ponderosa pine.

29. White fir, large: Forests in which most of the volume is in trees 12 inches or more in DBH (more than about 150 years old).

30. White fir, small: Forests in which most of the dominant trees are less than 12 inches in DBH (under about 150 years old).

Hardwood: Forests in which maple, aspen, cottonwood, etc. predominate; pure or in mixture. (Does not take precedence over oak woodland.)

31. Hardwood: Forests in which most of the trees are less than 12 inches in DBH.

31.5 Hardwood: Forests in which most of the trees are 12 inches or more in DBH.

33. Subalpine: Forests at upper limits of tree growth, usually unmerchantable because of poor form and small size. Principal components are alpine fir, mountain hemlock, Shasta red fir, lodgepole pine, whitebark pine, western white pine, and alpine larch. Usually interspersed with meadows and glades. No volume is recorded for this type.

Nonrestocked cutover: Logged areas that have not satisfactorily restocked (are less than 10 percent stocked) or that do not support a residual stand of 1,000 board feet per acre, and that are not put to other use.

35A. Areas cut since beginning of 1920.

35B. Areas cut before 1920.

37. Deforested burns: Lands not cut over on which the stand has been killed by fire, and that have not restocked. The remaining green timber, if any, is not loggable. Areas deforested by insects are designated by 37B; areas deforested by wind throw are designated by 37W; areas deforested by smelter fumes are designated by 37S.

38. Noncommercial rocky areas: Areas within the range of commercial timber below the limits of the subalpine type that are too rocky, too steep, or too sterile to produce a stand of commercial size, density, and quality. The timber may be of any species; it is not, and is not likely to be, of commercial value, because of difficult logging conditions, low quality, poor form, and low volume. Ordinarily the stand averages less than 5,000 board feet per acre unless of ponderosa pine, in which case it averages less than 8,000 board feet per acre. No volume is recorded for this type. This type does not include upper portions of valleys or higher slopes that are now inaccessible but are potentially loggable.